

A new cell-based AI-2-mediated quorum sensing interference assay in screening of LsrK-targeted inhibitors

Gatta, Viviana

2020-07-01

pö Gatta , V , Tomaai , T , Ilaa , J , Zidar , N , Peterlin Maai , L , Bara
Anderluh , M , Kikelj , D & Tammela , P 2020 , ' A new cell-based AI-2-mediated quorum
sensing interference assay in screening of LsrK-targeted inhibitors ' , ChemBioChem : a
European journal of chemical biology , vol. 21 , no. 13 , pp. 1918-1922 . <https://doi.org/10.1002/cbic.201900773>

<http://hdl.handle.net/10138/326054>

<https://doi.org/10.1002/cbic.201900773>

unspecified

acceptedVersion

Downloaded from Helda, University of Helsinki institutional repository.

This is an electronic reprint of the original article.

This reprint may differ from the original in pagination and typographic detail.

Please cite the original version.

Accepted Article

A Journal of

www.chembiochem.org

!"#\$%&'()*+,\$-./:0123456789@#1\$57\$5\$#&\$
*++*8"0#+&5\$5\$#06"47"9+5:(1*56\$1\$,"0#;0)0145+!

"#\$%&! ' %((%)^*+! ,#- . / #0! , . / %1#2^3+! 4%&56! 78%1^3+! 9%:5! ;<%0^3+! =>: #?! @5(50#&! A%1#2^3+! A#: -%58%! B%0%&2.C.\$D)^3+!E.C!F08%&^3+!A%0C.!G&<50>-^3+!H%:!|C58^3+!@J\$#!.% / / 58%K^%!

!) +15*%&!<L> .> / !M5&M#&N!&LQ!&!%3%:(50#%&! : / / > &-%#& .!&M(0%5NR)!& -%M!355&!05: .NA<!%M! .&5! .!(-5! : &(0.8! / 5: -%&M / M! .!\$0>#5&:5!&#&!3%:(50#%T! , ->M+! (%0N5(#&N! LP! .\$\$50M!%&!#&!(505M(#&N! .UU.0(>#&R!(. ! # / U%#0! 3%:(50#%&! U%(-.N5&#:#R!%&!< \$5\$8.U! %&(#\$0>#5&:5! %N5&(M!& G# / #&N!(. !5&-%&:5!(-5!<#M: . \$50R! .!L P!#&-#3#(.0M+!V5!<\$5\$8.U5<!%&! 3#.05U.0(50! !"#5&14WXXYY!UZ ,[@0M0>\!%&!<M5!(>U!%!:58[3%M5<!%MM%R! \$.0! #<5&(#\$R&N!#&-#3#(.0M! .!%>(.#&<:50!]] 0G7!]] [/ 5<#%(5<! LP!&G! : . / U%0%(\$5\$M(><R!&.(-5!U505.0 / %&:5! .!%0N5([3%M5<!%&#&:58[3%M5<! %MM%R!V%M!U505.0 / 5<!^_! : . / U.>&<M!M5&5:(5<1V#(-!(-5!U.(58(#%&!(. ! (%0N5(! -5!G , @! 3#&#&N! U.:C5!& .!\$! =M0!#&! C5R!5&6R / 5!&#&G!]] U0.:5MM#&N+!V505!(5M(5<!#&!%&=M0!I!#&-#3#(#&.%!MM%R!U0.\$#&#&N! 'a! -!(#M!& , -5!M% / 5!M5(!.! : . / U.>&<M!V%M! (5M(5<!3R!(-5!G7!]] / 5<#%(5<! LP!&#&(\$0505&:5!%MM%R!05M>#(&#&N!&]]b!%:(#\$5! : . / U.>&<M!G / .&N!(-.M5+a! : . / U.>&<M!V505!%8M. !%:(#\$5!%N%#&M(!=M0!I!V -505%M!_c! / %R! (%0N5(! .(-50! : . / U.&5&(M! .!(-5! U%(-V%R! , ->M+!(-5!G7!]] / 5<#%(5<! LP!&#&(\$0505&:5! :58[3%M5<!%MM%R!#M!%&!5555:(#\$5!{(. .8!\$.0! : . / U85 / 5&(#&N!& (%0N5([3%M5<!%MM%RM!3>(! %8M.!%M!&#&5U5&<5&(!%MM%R!\$.0! U0# / %0R!& M:055&#&N!&

-#154.3&104#"

B%:(50%#1#:(#.#&!M!05!.&5!(-5!3#NN5M!(!-05%(M!(.-!->/%&!-50%(-!)
)-!7&!S%:(+!MU.&(%&5.>M!/>%(#.#M+!:./3#5<!V#(-!(-5!N5&50%#!
/#M>M5!.\$!%&(#3#.(#:#M+!-%\$5!&.V!:/U0./#M5<(!-5!5\$%#:#R!/%&R!
%&(#3#.(#:#M+5!U.M#&N!->/%&M!(./!/>8(#<0N[05M#M%&(!3%:(50%#T!)]+&!
0,%<#(#.#&!%&(#3#.(#:#M!05!3%:(50#:#<%&!0!3%:(50#M.(#:#+!(!%0N5#&N!
5MM5&(#&!5:588-8%0!\$&#.(#.#M!V#-:-!05!058%(5<(!.3%:(50#%&!N0.V-(!
%&<!M>0\$5\$%&T!,-#M!85%<M!(.!.M5!5:(#.#&!.!\$!05M#M%&(!3%:(50#%&!
M>3U.U>8%(#.#M+!V#-:-!35:./5!(-5!<./&%&(!U.U>8%(#.#&T!
d.V5\$50+!(-5!:.&5U(!(-%(!#:(#.#&!#M!&.(!7>M!(-5!05M>8!(!.!(-5!
U05M5&:5!.\$!U%(-.N5&M!3>(!#(!0%(-50!<5U5&<M!.&!.M[
/#:0..0N%&M!/!&!(50%:(#.#M!#M!&.V!U05\$%#&N+!30.%<5&#&N!(-5!
(RU.8.NR!%&<!%\$%#%3#%#(R!.\$!(!%0N5(M!%<05MM5<#&(!(-5!<5\$5.U/5&(!
.\$!&5V!(05%(/5&(M!T!X!)P#&:5!\$0=>85&:5!M!(-5!%U%:#(R!.\$!3%:(50%#(!.!
%(!%&C!(-5!-.M!3R!%:(5\$%&N!M5\$50%&!/5-%&#M/M!C&.V&!%M!
\$0=>85&:5!\$%:(.0M+!#&(50\$50#&N!V#(-!\$0=>85&:5!%#M!(!<#M%0!/(-5!
U%(-.N5&M!V#-:-!:.>8<!35!(-5&!.85%05<!3R!(-5!-.M(!#!/>8&!
MRM(5/+8.V50#&N!(-5!5/50N5&:5!.\$!05M#M%&(:5T!)a+e+!c'

```
%!"#$%&'(%!*@.0!$!@J#$%!,% / %5%!
H0>N!E5M5%:-!@.N0% / +!H#$M#.&!.S!@-% / %:5>{#:%!B#.M:#5:&5M!
F%>:(R)!.S!@-% / %:R! f &$50M#(R)!.S! d5M#&C#!F7[YYY_b! d5M#&C#!
F#&8%<!
```

5[/ %#8a!U%#\$=T(% / / 58% h -58M#&C#TS=!

```
!
j3!GMM. :!@.ST! ,#- . / #0! , . / %1#2!GMM. :T! @0. ST!4%#56!78%1+!GMM#M(T!
@0. ST! 9% :5! ; #<#0+! @0. ST! => :?%! @5!508#! A %12+! A# : -%56%!
B%0%#2. C. $D!GMM. :T!@0. ST!E. C!F08%#&!@0. ST!A%0C. I G#<508> -+!@0. ST!
H%#&#58! :!#C58#!
```

f 2M#(R! . \$! =?>38?%&#%+!F% :>8(R! . \$! @ - %0 / % :R+!G1C5025\$!e+!_YYY!
=?>38?%&#%+!P8 . \$5&#%!

1

[illegible]

FULL PAPER

.&!> / #5M:5&:5! f M#&N!(-#M!%MM%R+!V5!U50\$.0 / 5<!M:055&#&N!.\$!%!
 ^_[:. / U.>&<!#30%0R+! .0#N#&%8R!<5M#N&5<!%M!NR0%M5!B!#&-#3#(.0M!
 (%0N5(#&N! #M! G, @! 3#&<#&N! M#(5!))a! %&<! (->M! 5&<.V5<! V#(-!
 :%U%3#&#(R!(. !(%0N5(!%8M.!=M0 I!G, @!3#&<#&N!U. :C5(T! , -5!M:055&#&N!
 %N%#&M(! =M0 I! #&! (%0N5([3%M5<! \$>&:(#.&%8! %MM%R! 85<! (! (-5!
 #<5&(#\$:#%#.&!.\$!.\$!^!%:(#5\$!:. / U.>&<M+!V#(-!%&!7mxy!0%&N#&N!S0. / !c!
 (.!_be!nAT!G / .&N!(-.M5+!a!M-.V5<!%:(#\$#(R!#&!(-5!3#.05U.0(50!
 M(0%#&+!# / U%#0#&N!(-5!05MU. &M5!(. !LP!%M!05M>8!(. \$! =M0 I!#&-#3#(#.&T!
 G<<#(#.&%8R+!_c!:. / U.>&<M+!V-#:-!<#&!&.(!<#MU8%R!%&R!%:(#\$#(R!
 %N%#&M(!=M0 I!V505!S.>&<!%:(#\$5!&8!(-5!3#.05U.0(50!M(0%#&+!%M!05M>8!(
 . \$!(-5!#&-#3#(#.&.\$!.\$!(-50!:. / U.&5&(M!.\$!(-5!U%(-V%R+!U0. \$&N!(-5!
 5\$5:(#\$5&5MM!.\$!.\$!>0!3#.05U.0(50!M(0%#&+!%M!%&5V!(. .8!S.0!<#M:. \$50R!
 . \$!LP!#&-#3#(.0MT!

= \$+3'1+ " * # , ">0+&3++04#"

?&5\$ \$ #0#6" * 6 * 0# +1"9+5 : "

m. / U.>&<! #30%0R! MR&(-5(#65<! %M! G, @[:. / U5(#\$5! NR0%M5! B!
 #&-#3#(.0M+!V%M!>M5<!%M!%M!M(0(#&N!U.#&(T! , -#M! #30%0R! :.&(%#&5<!
 / .05!(-%&!cYY!:. / U.>&<M!.\$!.\$!V-#:-!^_!M(0>:(>0%8R!<\$50M5!
 :. / U.>&<M!V505!M585:(5<! \$M>%8R!(. !:.\$50!(-5!V-.85!:-5 / #:%8!
 MU%:5!.\$!(-5!#30%0R!%&<V505!(5M(5<!%N%#&M(!=M0 I!%(!_YY!nA!>M#&N!
 %!C&%M5!#&-#3#(#.&!%MM%RT!)!e!m. / U.>&<M!M-.V#&N!%&!#&-#3#(#.&!o!
 eY!p!V505!M585:(5<! \$.\$!<.M5[05MU. &M5!5\U50# / 5&(M!0, %385!_+!
 F#N>05!P_QT!!
 !
 !

@*) '\$A8!7mxy!\$%>5M!S.0!(-5!]^!U. M#(\$5!
 -#(M! M5!5:(5<! 3R! U0# / %0R! M:055&#&N!
 %N%#&M(! =M0 I!T! H%(%! U. #&(M! 05U05M5&(!
 / 5%&M! q! PH! \$0. / ! (V. ! \$<5U5&<5&(!
 5\U50# / 5&(M!0&r bQT!

m. / U.>&<!	7mxy!0! Aq!
f=[Y_!]a!q!_!
f=[Y]!	ea!q!a!
f=[Y'!]cq!_!
f=[Yb!	_eq!]!
f=[YX!	_cq!]!
f=[Ya!	_beq_]!
f=[Ye!	Xbq!]!
f=[Y^!	ecq!]!
f=[_Y!	a'q!_!
f=[_!	'a!q!X!
f=[_]!	'!q!_!
f=[_'!	_clq!_!
f=[_b!	'!q!]!
f=[_X!	_!q!Y!_!
f=[_a!	bY!q!]!
f=[_e!	clq!_!
f=[_c!	'^!q!]!
f=[_!!]^!q!]!
f=[Y!	c'!q!c!
f=[_]!	_X!q!_!
f=[]]!]e!q!b!
f=[']!	bY!q!'!
f=[b!]_!q!]!
f=[X!	bX!q!a!
f=[a!	_Y!q!_!
f=[e!	_!q!_!
f=[c!	X_!q!b!
f=[^!	X^!q!]!TX!
f=[^Y!]b!q!b!

C\$''()*+,\$," !-(./,\$,0*1\$," D?" 0#1\$57\$5\$#&\$"
 *++*8"

!
 @05\$#.>M8R! 05U.0(5<! :588[3%M5<! G7][/ 5<#%(5<! LP! #&(50\$505&:5!
 %MM%RM!U05M5&(!M. / 5!8# / #(%#.&M!<>5!(!(-5!:. / U85\#(R!%&<!85&N(-!
 . \$! (-5! U0.(. :.8! (.N5(-50! V#(-! 8.V! M5&M#(#\$#(R! %&<! U.(5&(#8!
 #&(50\$505&:5!3R!(. \#:#!:. / U.>&<MT!G# / #&N!(. !5&\$\$.0:5!(-5!<#M:. \$50R!
 . \$!%&(#\$#0>85&:5!%N5&(M!3%M5<!.&!G7][/ 5<#%(5<!LP!#&-#3#(#.&+!V5!
 <5M#N&5<#!%&5V!U8%M / #<!UZ, [@8M08>\!V-#:-!:.&(%#&M!(-5!3%:(50%8!
 8>:\$50%M5!U50.&8!-. / , 0 1 !!>&<50!:.&(0.8!.\$8!)^!%L P!05MU. &M#\$5!
 U0. / .(50+!%&<5\$58.U5<!%&5V!3#.05U.0(50!%MM%R!V-#:-!%88.VM!
 0%U#<#!#<5&(#\$:#%#.&.\$!LP!#&-#3#(.0M!3R!8> / #&5M:5&:5!<5(5:(#.&!
 (5:-&8.NRT! , ->M+!V-5&!G7][/ 5<#%(5<!LP!#M!%:(#\$5<+!(-#M!85%<M!
 (. !8!-. !5\U05MM#.&%&<U0.<>:(#.&.\$!8#N-(!V-505%M+!#&8!(-5!U05M5&:5!
 . \$!LP!#&-#3#(.0M!&.\$!8#N-(!V88!35!<5(5:(5<T! , -5!U8%M / #<!V%M!
 :.&M(0>:(5<!3R!05U8%#&N!(-5!@5M%E+!%L P!05MU. &M#\$5!U0. / .(50!
 #&<>:5<! 3R!['. \. [-5\%&.R8[-. / .M50#&5! 8%:(.&5+! V#(-!(-5!8M0!
 U0. / .(50!#&8!(-5!UZ, [

